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AUTHOR Rembert, Ron B.
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ABSTRACT

The Philosophy for Children Program was introduced to a class of deaf fifth graders as an instructional approach for reasoning skills. The program is intended to develop analytic skills required for intellectual functioning (including concept development, generalization, inference making, question formulation, and analogies). The program's major aim is to foster students' thinking about thinking. Affective issues--such as student frustration and insecurity--and teaching strategies are described. Examples are provided to illustrate the range of exercises used in the program. Evaluation of the program's first year resulted in greater emphasis on examining students' experiences inside and outside the classroom. (CL)

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PHILOSOPHICAL INQUIRY AMONG HEARING-IMPAIRED STUDENTS: PROMOTING THE DEVELOPMENT OF THINKING SKILLS THROUGH THE USE OF PHILOSOPHY FOR CHILDREN PROGRAMS

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Ron B. Rembert
Texas Wesleyan College

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Abstract

In November, 1981, the Regional Day School for the Deaf in Ft. Worth, Texas provided the setting for the first of several philosophical discussions which have stretched over a two-year period among hearing-impaired students. In that first discussion, seven children ranging in age from eleven to twelve tackled the question, "What does 'personality' mean?" a conceptual issue underlying the topic of personal identity explored by them on that occasion. From the outset, such a demand for conceptual analysis challenged the students to develop and to utilize certain analytic skills. The development and use of those skills in philosophical discussions generated by Philosophy for Children materials has remained the primary objective of our ongoing efforts at the school. A program description of such efforts over the past two years to establish a Philosophy for Children Program at the Regional Day School for the Deaf will address the problems and prospects associated with (1) implementing the program, (2) practicing the program, (3) extending the program, and (4) evaluating the program. An introduction to the report will provide a brief history and statement of purpose of the Philosophy for Children Program, in general, before moving to the more detailed account of the use of this program with hearing-impaired students, in particular.

In the introduction, a description of the Philosophy for Children Program created by Dr. Matthew Lipman of the Institute for the Advancement of Philosophy for Children at Montclair State College in New Jersey sets the stage for the entire report. The IAPC, established by Dr. Lipman in 1972, promotes the development of thinking skills through philosophical discussions among students in grades 3-9. The discussions emerge from the reading and the study of philosophical novels for children in which the characters discover and explore the power of logic and thinking analytically. The best known novel, Harry Stottlemeier's Discovery, has stimulated philosophical discussions among children from New York to California and in many foreign countries.

In implementing the program at the Regional Day School for the Deaf, Harry Stottlemeier and his friends in the novel have played an important role. These characters serve as models for the children in the class in their portrayal of philosophical inquiry. This kind of inquiry which involves, at one point, precise logical analysis and, at another point, open-ended exploration of complex concepts was unfamiliar to the class of hearing-impaired students. In the beginning, this group of students encountered great difficulty in moving from one activity to another. Greater difficulty arose in addressing questions for which there are no easy, straightforward answers. Offering such answers to complicated philosophical questions and then resorting to facial cues or to verbal responses for some indication about the correctness or incorrectness of them proved ineffective in this kind of inquiry. Among the students, feelings of frustration arose; attitudes of impatience surfaced. Implementation of the Philosophy for Children Program at the Regional Day School for the Deaf has involved, for the most part, the design of

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strategies for addressing these feelings and attitudes on the way towards helping students build up the endurance and acquire the patience necessary for engaging in prolonged philosophical inquiry.

In practicing the program, other cognitive issues besides those connected with the affective side of inquiry arose. Lack of familiarity with key concepts and distinctions limited the range of philosophical inquiry. Attempts to teach such concepts as vocabulary words or to trace such distinctions along traditional philosophical lines intensified, rather than resolved, the problem. However, continuous practice in conceptual analysis and in deciphering the shades of meaning or ambiguity of idiomatic phrases has strengthened the students' analytic skills. Specifically, exercises utilizing Aristotelian or class logic, the logic of relationships, induction and deduction, cause and effect reasoning, and hypothetical syllogisms have improved their thinking abilities and enabled them to engage in philosophical inquiry. Examples of such exercises will appear in this section of the report.

In extending the program, attempts at adapting those thinking skill exercises for use with a Social Studies text, The World and Its People, studied at the Regional Day School for the Deaf have proven quite effective. The goal in this effort is to make conceptual analysis and inductive reasoning integral parts of the general curriculum of the school. Specially constructed exercises have brought logical reasoning to discussions about Exploration, in general, and the discoveries of the Vikings, in particular, in the Social Studies curriculum.

In evaluating the program, teachers have discovered that promoting the development and use of thinking skills through the Philosophy for Children Program has strengthened the analytic skills of the students in other subject areas. In addition, the students have demonstrated greater and greater endurance and patience in sustaining philosophical inquiry two sessions per week over the last years. Plans for testing the success of the program are underway and may provide some statistical data before the presentation of this report.

In conclusion, this program description of our efforts to initiate the Philosophy for Children Program at the Regional Day School for the Deaf in Ft. Worth, Texas will focus upon the problems and prospects connected with (1) implementing the program, (2) practicing the program, (3) extending the program, and (4) evaluating the program. Excerpts from philosophical discussion will be included in the report as well as examples of logic exercises used to promote philosophical inquiry among hearing-impaired students.

In November, 1981, the Regional Day School for the Deaf in Fort Worth, Texas provided the setting for the first of numerous philosophical discussions among hearing-impaired students. These discussions, which stretched over a two-year period, arose initially from the reading and interpretation of a philosophical novel for children, Harry Stottlemeier's Discovery (Lipman, 1974), a book which challenges students to develop and to utilize certain analytic skills. The development and the use of these skills stands as the primary objective of our efforts to establish an ongoing Philosophy for Children Program at this particular school. The following account of our efforts to introduce such a program at the Regional Day School for the Deaf highlights the problems and prospects associated with: (1) implementing the program, (2) practicing the program, (3) extending the program, and (4) evaluating the program. The Introduction which precedes this analysis includes a brief history and statement of purpose of the Philosophy for Children Program and a journal account of that first philosophical discussion which will serve as a reference point for the remainder of this report.

Introduction

The Philosophy for Children Program introduced in November, 1981 at the Regional Day School for the Deaf stems from the work of Dr. Matthew Lipman, Professor of Philosophy at Montclair State College in New Jersey and Director of the Institute for the Advancement of Philosophy for Children located on that same campus. In 1968, after nineteen years of teaching philosophy at Columbia University, Dr. Lipman expanded his philosophical and pedagogical interests from the university setting to the public school setting. His new interests rested upon a conviction and a concern that "we might do a better job of teaching children to reason" (Holley, 1981). Acting on that conviction, Dr. Lipman began writing a

philosophical novel for children. In that first novel, Harry Stottlemeier's Discovery, Lipman portrays the characters, Harry and his friends, making discoveries, ones which indicate the value of logic for solving problems arising inside and outside of their classroom setting. In reading this philosophical novel and discussing it, students in public school settings have the opportunity to make the same discoveries. Many children have had that opportunity to make the same discoveries. Many children have had that opportunity since 1972 when Dr. Lipman left Columbia University for Montclair State College and the establishment of the Institute for the Advancement of Philosophy for Children. As Director of IAPC, Dr. Lipman has written various philosophical novels for children, including Kio and Gus (Target Grade: 3), Pixie (Target Grade: 4), Lisa (Target Grades: 7-9), Suki (Target Grades: 8-10), and Mark (Target Grades: 8-10) which, along with Harry Stottlemeier's Discovery (Target Grades: 5-6), comprise the Philosophy for Children Program (Note 1).

The Philosophy for Children Program aims at the development and the use of certain analytic skills required for intellectual functioning. The following list indicates some of the skills exercised in the materials utilized in the program (Lipman, n.d.):

Concept-development
Generalization
Formulating cause-effect relationships
Making immediate inferences
Drawing syllogistic inferences
Formulating questions
Identifying underlying assumptions
Grasping whole-part and part-whole connections
Knowing when to avoid, tolerate, or utilize ambiguities
Ability to recognize and avoid--or knowingly utilize--vagueness
Recognition of interdependence of ends and means
Giving reasons
Making distinctions
Making connections
Working with analogies
Definition
Identifying and using criteria
Constructing hypotheses

The major objective in exercising students in the development and the use of such skills is the promotion of "thinking about thinking" on the level of metacognition (Lipman, 1974). Note a hierarchy of skills implicit in the list. Some skills require others for their successful use. For example, 'working with analogies' requires 'making distinctions' and 'making connections.' Other skills dictate the use of these particular ones. For example, 'knowing when to avoid, tolerate, or utilize ambiguities' or the 'ability to recognize and avoid--or knowingly utilize--vagueness' are meta-skills. The Philosophy for Children Program promotes the development and the use of these various skills while challenging students to consider metacognitive issues involving 'thinking about thinking.'

Sternberg (1979) identified three categories of "composite tasks," "subtasks," and "metacomponents"--generated by Sternberg in his study of "information-processing;" the "thinking skills" in the Philosophy for Children Program may be associated with the levels of mental ability identified by Sternberg. In his investigations of "information-processing," Sternberg describes four levels of mental abilities--"composite tasks, subtasks, information-processing components, and information-processing metacomponents." For example, for Sternberg, those exercises oriented towards 'working with analogies' serve as "composite tasks" or "the full task as the subject sees it." Under this category, Sternberg lists such tasks as analogies, classifications, series completion, metaphorical completions and ratings, linear syllogisms, categorical syllogisms, and conditional syllogisms. Those exercises involving 'making distinctions' or 'making connections' serve as "subtasks" or "a subset of the information-processing components that are involved in the full task." Finally, those exercises involving decisions about ambiguity and vagueness isolate "metacomponents" in information-processing or "those processes by which subjects determine what components, representations, and strategies should apply to certain problems."

In the Philosophy for Children Program, the development and the use of these various skills or components occur within the context of philosophical discussion arising from the reading of one or another of the philosophical novels for children. A philosophical discussion, in this case, involves inquiry arising from questions. Note the variety of questions generated during the first discussion at the Regional Day School for the Deaf in November, 1981 as recorded in a journal:

> Our discussion began with the question, What is 'thinking?' In answer to that question, Stephen listed various subjects about which we think--math, time, etc. My next question followed Stephen's lead--How would you describe the way you think when you think about math, time, etc.? This more difficult question found Stephen without an answer, so I adopted another strategy. Next question--Do we think when we are asleep? Some children said, "no!" while other said, "yes!" I asked if 'dreaming' involved 'thinking' and found a consensus of agreement on that point. Returning to the previous question, then, we reached final agreement about the issue of whether we think when we are asleep. We do think, at least, when we are dreaming because dreaming is a way of thinking and we dream when we are asleep. Building upon the point about 'dreaming' and 'thinking,' I asked the children if there are other ways besides dreaming in which we think. There were no responses to this question until Mrs. Schweitzer and I offered some vocabulary words, some of which the children knew but many of which they did not know. The students already knew the concepts of 'dreaming,' 'wondering,' 'hoping,' but not 'imagining.' When asked by Mrs. Schweitzer what 'imagining' meant, the children guessed "making believe." I pursued questions about 'hoping,' inquiring about whether one could hope about something in the past. The children agreed that one could not hope about something in the past but only in the future. Ms. Schweitzer emphasized that 'hoping' involves 'thinking' about the future.
>
> Using the concept of 'hope' as a transition, I asked if 'hoping' involved 'feelings' as well as 'thinking.' The children claimed that 'hoping' involved both, so I asked if 'thinking' is the same as 'feeling.' Rather than answering that question, the children began to list feelings such as sadness and happiness and to offer personal experiences exemplifying such feelings. After Robbie told us about his dog and the trip to the hospital after the dog had been hit by a car, I asked Robbie if he felt sad about the incident--"yes"--Did your mother feel sad?--"yes"--Do you think that your mother felt sad in the same way that you felt sad?--"no"--How do you know?--"I cried, but she didn't"--(To the class)--Do you think that adults have the same feelings as children?--"no"--Why?--"Because they are older"--Do you think you will have the same feelings when you are older as you have now?--"no"--Why?--"Because we will have gray hair."

> This line of questioning led us to others about personal identity--Would you be a different person if you had a different name? Are you the same person now as you were when you were born? Will you be the same person when you are 80 as you are now? Answers to these questions about identity were in the negative followed by listings of physical characteristics which change over time. I then asked the students a question about 'personality,' a concept whose sign and meaning the students did not know. Mrs. Schweitzer told the children that I would define the concept for them, but I did not do so on this occasion, leaving that question open as the topic of discussion for our next meeting. (Rembert, 1981)

In this initial philosophical discussion, the students encountered a series of questions requiring the development and the use of certain analytic skills which appear on that list covered by the Philosophy for Children Program, i.e., concept development (What is 'thinking?' Does 'dreaming' involve 'thinking?'), the making of distinctions (Is 'thinking' the same as 'feeling?'), the identification of underlying assumptions (Can one 'hope' about something in the past or only in the future?), the making of connections (Are you the same person now as you were when you were born?), and the giving of reasons (Do you think that adults have the same feelings as children? Why? Do you think you will have the same feelings when you are older as you have now? Why?) Questions generated during philosophical discussions of novels include 'n the Philosophy for Children Program challenge students to develop and to use certain analytic skills.

Implementing the Program with Hearing-Impaired Students

Implementation of the Philosophy for Children Program at the Regional Day School for the Deaf in Fort Worth began with that first philosophical discussion. Permission to launch such a discussion had been granted by Mr. William Moffatt, principal of the school, after receiving the agreement of Mrs. Schweitzer, a fifth grade teacher, to introduce the program with her class of hearing-impaired students. That agreement was reached after the author's initial visit to the class in October, 1981 when he observed the students engaging in a 'discussion.'

That 'discussion' had the appearance of 'a question-and-answer period.' Questions arose; answers surfaced. However, the exchange of questions and answers kept the focus of the 'discussion' on the teacher, not on the students and their interaction with one another. This observation led to the agreement that, in implementing the program in this setting, we would distinguish between a 'discussion' and a 'question-and-answer period.'

Preparing the hearing-impaired students in that class to engage in 'discussion' rather than 'a question-and-answer period' proved to be the greatest challenge in implementing the program in that setting. Our initial discussion established some expectations for philosophical inquiry among the students in the class. First, exploration of complex concepts such as 'thinking,' 'dreaming,' 'hoping,' 'imagining,' etc. would be the rule in our discussions rather than the exception. Secondly, exploration of complex concepts would follow a line of questioning that would not always lead to clear-cut answers. Thirdly, each student in the class would be expected to participate with fellow classmates in following the line of questioning required in exploring complex concepts.

The six hearing-impaired students in the class embraced these expectations, but faced some difficulties in satisfying them. The first expectation, that exploration of complex concepts would be the rule rather than the exception, forced the students to consider a range of possible meanings for a concept which, to that point, had appeared to them to have a single definition, the one listed as a simple item on a vocabulary sheet. Recognizing the problems associated with treating complex concepts as vocabulary words was a painful lesson for the students in our early discussions. The ambiguity of language, especially apparent in the concepts at work in our philosophical discussions, presented a special challenge. The second expectation, that a line of questioning used in exploring complex concepts would not always lead to clear-cut answers, forced the students to build endurance

and acquire patience for engaging in philosophical discussion. Few students had tackled questions for which there are no obvious answers such as "What is 'thinking?'" before participating in our discussions. Their strategies for addressing such questions were the same ones used in question-and-answer exchanges arising from the study of traditional subject areas--resorting to facial cues or to verbal responses for some indication of the correctness or incorrectness of their answers. Finding the constant facial cue or verbal response in our philosophical discussions to be another question such as "Why?" or "How?" the students had to create new strategies for this different kind of exchange which requires endurance and patience for success. The third expectation, that each student would participate with fellow classmates in following the line of questioning used in exploring complex concepts, forced the students to interact as discussants in a discussion rather than as competitors in a question-and-answer period. In the Philosophy for Children Program, challenging the students to accept the special set of demands and expectations placed upon them as discussants engaged in a discussion paves the way for creating the all-important "community of inquiry" (Lipman, Sharp, & Oscanyan, 1980). The notion of a 'community of inquiry' in which fellow discussants share responsibility for the outcome of all inquiry efforts underlies the Philosophy for Children Program.

Affective issues arose with the students' attempts to meet these expectations. Feelings of frustration accompanied our early explorations of complex concepts, especially those which were quite ambiguous. Feelings of insecurity and impatience surfaced with the realization that philosophical questions do not always have clear-cut answers. And feelings of discomfort and embarrassment emerged in response to the special demands and expectations involved in acting as a discussant in a 'community of inquiry.' To address these affective issues

required the design of various strategies, some oriented towards relieving the frustration, others promoting security or demanding patience, and others attempting to diminish the level of discomfort and embarrassment felt by these newcomers to philosophical discussion.

Some of the strategies involved: (1) the use of a special set of exercises on ambiguity to help students anticipate the range of meanings of complex concepts (relieving some of the frustration accompanying the exploration of complex concepts), (2) devoting entire discussions to a single philosophical question whose final answer never emerges, but whose possible answers receive careful consideration, being accepted or rejected by the class (promoting some sense of security and developing some patience for the philosophical enterprise), (3) building idea upon idea of each discussant in our discussion in an effort to draw all students into the inquiry by asking such questions as, "Who can tell me what Stephen just said?" or "Who wants to add an idea to what Robbie just said?" or "Who can help Barbara with that point?" (diminishing the feelings of discomfort and embarrassment associated with participation as a discussant in philosophical inquiry). What made these strategies effective or ineffective was the amount of time devoted to the practice of them.

Practicing the Program

Practicing the program occurred during two forty-five minute sessions each week throughout the school year. Prepared thinking skill exercises usually set the agenda for each session. However, many philosophical issues for which no exercises had been planned surfaced spontaneously during our discussions. To pursue these issues required designing exercises on the spot. Whether prepared before the class or generated during it, the exercises stemmed from those contained in Lipman, et al. (1979) Philosophical inquiry: An instructional manual to accompany Harry Stottlemeier's Discovery. This manual (PI) written for particular

use with the philosophical novel, Harry Stottlemeier's Discovery, is an excellent collection of ideas and exercises for promoting philosophical inquiry.

The following examples indicate the range of exercises used in practicing the Philosophy for Children Program at the Regional Day School for the Deaf:

Ambiguity (PI, p. 88)

Review various meanings of the word, "hot," to indicate its ambiguity. The meanings utilized in this exercise are (1) "high temperature" (2) "popular; favorite" (3) "spicy" (4) "stolen" (5) "repeating a successful act"

Ask the students to identify which meaning of the word, "hot," is in use in the following paragraphs.

I. After buying ice cream cones at Baskin-Robbins, Harry and Suki sat outside the store and ate their cones. Harry took a bite out of his cone and said to Suki, "Wow! I'm surprised. This flavor is really hot!"

II. Fran and Lisa went shopping. First they visited a poster shop and saw a poster of Superwoman. Seeing the girls in front of that poster, the clerk in the shop said, "You should buy that one. It is the hottest poster in the store. Everybody has one!"

III. Mrs. Halsey took her English class to the beach. The boys and girls built sand castles, went swimming, ate lunch, and played volleyball. After three hours of fun and games, Lisa asked Mrs. Halsey if they could go back to school. She complained that she was too hot to play any longer.

IV. At midnight, two policemen walked around the corner of the building beside the used car lot and saw a man driving away in a red Ford with no license plate. One policeman called the police station on his radio and reported that the red Ford heading north on Main Street was hot.

V. After the teacher had told the students their grades on the math test, Timmy asked Tony, "What grade did you make?" Tony answered, "100. It's the fifth time-in-a-row that I have made that grade." "Wow," said Timmy, "you are really hot when it comes to doing math problems."

After preparing the students for that exercise by noting at the outset possible meanings for the word, "hot," before using the word in various sentences, we provided no preparation for the following exercise which asks students to identify the word in the sentence which could have more than one meaning:

Ambiguity (PI, p. 87)

Identify the word in each sentence which could have more than one meaning.

(1) They bug me every minute I am at home.
(2) Steaks like that are rare.
(3) That fellow walking down the street is really cool.
(4) Mr. Milello wondered what to do about the bark.
(5) The deck was not ready to be used.
(6) The robber paid for everything he did at the shop.
(7) Tony was at the top of his class.
(8) There were too many feet in the room.
(9) He broke his father's will.
(10) Yesterday we gave her a ring.
(11) Tony put his bat and glove in the trunk.
(12) Jim did not skip very much.

For those sentences in which the students knew the meanings of all the words, they were able to identify the one word which could have more than one meaning. For example, they identified "rare," "cool," "bark," "top," "feet," "ring," "trunk," and "skip." However, the students were unfamiliar with the word, "bug," used in the first sentence, the word, "deck," used in the fifth sentence, the word, "paid," used in that particular way in the sixth sentence, and the word, "will," used in that particular way in the ninth sentence. Their difficulty with some of the sentences was connected with the idiomatic use of such words as "bug" and "paid" in their respective sentences.

Following these two exercises on ambiguity, we attempted an extended and prolonged discussion of an ambiguous concept, 'mind':

Ambiguity (PI, p. 146)

What is a 'mind'? In answering this question, determine the meanings of the word, "mind," in the following sentences.

I don't mind if I do.
Mind your own business.
Would you mind helping me?
I would like to give you a piece of my mind.
Two minds are better than one.
I am losing my mind.
Mind your head.

This exercise proved much more difficult for the students than the two previous ones devoted to ambiguity. Not only did they encounter in this exercise an extremely complex concept, but also found themselves attending to the basic question, What is a 'mind'? for the duration of the class discussion.

Other exercises demanded on the part of the students the use of specific thinking skills:

Making immediate inferences (PI, p. 13)

Determine the truth value of Sentence 1 in each set of sentences. Reverse the parts of Sentence 1 to generate Sentence 2. Determine the truth value of Sentence 2.

Sentence 1	All dogs are animals.	True
Sentence 2	All animals are dogs.	False
Sentence 1	All oaks are trees.	True
Sentence 2	All trees are oaks.	False

In this exercise, the students discover a rule about the relationship between classes of things--that the members of Class A are members of Class B does not mean that the members of Class B are members of Class A. The students faced no difficulty with this type of exercise. To the contrary, they proceeded to create their own sentences using the basis formulation, "All _____ are _____," and determined the change in truth value as a result of reversing the parts in Sentence 1 in Sentence 2.

However, the students did encounter difficulty with the following exercise involving cause/effect reasoning, but not for the reason anticipated.

Formulating Cause and Effect Relationships (PI, p. 396)

Identify the 'cause' and 'effect' described in the following sentence:

A Cadillac ran the stop sign and crashed into the Ford crossing the intersection.

The students quickly acknowledged the 'effect' to be the "crash." However, they pinpointed the 'cause' as the "stop sign." No amount of questioning would convince them that the Cadillac, not the stop sign, caused the crash. Finally, it occurred to the author that the idiom, "ran the stop sign," might be the source of the problem. The students were translating that idiom as "ran over the stop sign," which, accordingly, makes the stop sign a cause for some crash. This experience and others like it suggested that the particular difficulties faced by the students in tackling Philosophy for Children exercises arose primarily as a result of deficiencies in language experience with certain idioms and concepts, not deficients in language ability.

Extending the Program (Rembert, 1983)

Adaptation of exercises form Philosophical inquiry: An instructional manual to accompany Harry Stottlemeier's Discovery have provided a starting-point for analyzing issues in a Social Studies text, The United States and Its Neighbors, studied by the students at the Regional Day School for the Deaf (Helmus, et al., 1982). The goal in this effort is to make conceptual analysis and inductive reasoning integral parts of the general curriculum of the school. The need for exercises demanding conceptual analysis grows apparent at the end of a passage in The United States and Its Neighbors which introduces the topic of "Exploration." In that passage, a misleading generalization about the connection between 'exploration' and 'discovery' creates a conceptual confusion:

> Have you ever gone exploring? Perhaps you have hiked deep into a wood, deeper than you have ever been before. You might have discovered trees or flowers or insects there that were new to you. Maybe you found a stream you didn't know about. You probably brought back a leaf for a plant to show your parents or friends. Or perhaps you moved to another home and went for a walk around your new neighborhood. You might have found streets and buildings you had never seen before and people you had never met. You probably told your family what you had seen.

> If you have ever done anything like these things, you were exploring. To explore means to search for new things or places. It means making discoveries. (Helmus, et al., 1982)

The exercise adapted to focus attention on the misleading generalization in the last sentence challenged the students to distinguish between explorations and discoveries and, in the process, consider the differences between these and inventions:

> Making Distinctions (PI, p. 7)
>
> Ask the students to identify 'explorations.'
>
> > (Possible answers: exploring for fossils in a cave, exploring for coral near the ocean floor, and exploring for rocks on the playground)
>
> Ask the students to identify 'discoveries'
>
> > (Possible answers: Columbus discovering America, Thomas Edison discovering the light bulb, Benjamin Franklin discovering electricity)
>
> Ask the students to identify 'inventions'
>
> > (Possible answers: magnets, television, airplanes, etc.)
>
> Reconsider whether Thomas Edison's light bulb, listed above as a 'discovery' might be an 'invention.' What is the difference between a 'discovery' and an 'invention'?
>
> Consider whether the exploration for fossils in a cave always leads to the discovery of fossils? Or does the exploration for coral near the ocean floor always lead to the discovery of coral? If not, what is the difference between an 'exploration' and a 'discovery'?

These considerations prompted the students to conclude that many, but not all, explorations lead to discoveries. That conclusion generated other questions--Do many, if not all, discoveries arise from explorations? To make a discovery, does one have to be engaged in an exploration? This exercise and concluding questions forced the students to tackle the conceptual confusion at the end of the introductory passage about "Explorations" in their Social Studies Text.

A second exercise, which proved to be more difficult, challenged the students to attribute various ways of thinking to the activities of exploring and discovering.

Making Distinctions (PI, p. 196)

> Ask each student in the class to assume the position of an explorer who aims to discover fossils in a cave. Being novices, each explorer needs a guide to lead him or her into the cave. Six guides are available. Each guide bargains for the job as a leader by making one of the following claims:
>
> Guide 1: I hope that there are fossils in this cave.
> Guide 2: I guess that there are fossils in this cave.
> Guide 3: I believe that there are fossils in this cave.
> Guide 4: I know that there are fossils in this cave.
> Guide 5: I imagine that there are fossils in this cave.
>
> Each explorer must choose to follow a guide on the basis of that guide's claim.

In choosing which guide to follow, the explorer must consider the differences among the concepts of 'hoping,' 'guessing,' 'believing,' 'knowing,' and 'imagining.' The students tackling this exercise agreed to follow Guide 2 or Guide 3, treating 'guessing' and 'believing' as synonyms. Might the students have been guessing?

Another set of exercises tested the students' abilities at inductive reasoning and, like the other examples, addressed issues raised in another passage in the chapter entitled, "Exploration":

Leif Ericson

> The Vikings also passed stories about a great explorer named Leif (lav) Ericson. The stories told that in the year 1000 Leif Ericson had sailed west across the north Atlantic from a Viking settlement in Greenland to a new and unknown land. He named the new land Vinland. The stories also said that after Leif's discovery, other groups of Vikings settled in this new land. They built stone houses. They planted crops and raised cattle.
>
> But old stories alone are not proof that something really happened. If there had been settlements, they had disappeared. Certainly no other European settlers had followed the Vikings to the new

> land. However, years ago, archeologists discovered the remains of some old stone buildings in Newfoundland. Find Newfoundland on the eastern coast of Canada. You can see it is not very far from Greenland.
>
> The archeologists could prove that the oldest building they found had been built by the Vikings. They were able to tell that these buildings had been built about A.D. 1000. Many Viking artifacts were also discovered nearby. Now there was real proof that the Vikings had come to North America as early as the year 1000. (Helmus, et al., 1982)

In this passage, the distinction between no proof in the form of old stories and real proof in the form of archeological discoveries raises the issue of evidence in reasoning inductively. After discussing ways in which old buildings and ancient artifacts provide evidence whereas old stories do not for proof of Viking settlements in the New World, the students tackled two exercises involving inductive reasoning.

The first exercise, based upon one entitled "Inductive Reasoning" (PI, pp. 112-113), provides evidence for certain conclusions, and challenges the students to evaluate whether the evidence supports or fails to support the conclusion:

> Inductive Reasoning (PI, p. 267)
>
> Evaluate the following arguments, determining whether the evidence does or does not support the conclusion in each example:
>
> Proof I
>
> I get sick when I eat ice cream
> I get sick when I eat candy
> I get sick when I eat cake
> ---
> I get sick when I eat food
>
> Proof II
>
> It was cold on Monday
> It was cold on Tuesday
> It was cold on Wednesday
> ---
> It will be cold on Thursday and Friday

In regard to Proof I, the students immediately proposed counter-examples to the argument, citing pizza, in particular, as an example of a food which does not make

them sick. On these grounds, they decided that the evidence provided for Proof I does not support the conclusion supporting all foods. In regard to Proof II, the students decided that the evidence provided does support the conclusion. A question regarding the need for adding a qualifier, "probably," to the conclusion led the students into a discussion about the certainty with which forecasters predict the weather.

The second exercise returned to this question after a review of the issue of evidence:

Inductive Reasoning (PI, p. 267)

Conclusion: Leif Ericson discovered Newfoundland.

Evidence 1	Evidence 2
Old stories	Archeological discoveries

Conclusion: I am taller this year than I was last year.

Evidence 1	Evidence 2
I appear taller	I measured my height and found myself to be taller

Conclusion: This winter will be colder than last year.

Evidence 1	Evidence 2
My big toe always hurts when the weather gets cold and it hurts more this year than last year	The weathercaster predicted that this winter will be colder than last winter

In each case, the students decided for Evidence 2 as support for the various conclusions. Commentary on the last two examples emphasized the use of measurement in providing the supporting evidence in both cases. The last example concluded with the question, "What if the weathercaster had predicted that "this winter will be colder than last winter" on the grounds that "his big toe hurts when the weather gets cold and that it hurts more this year than last year?" The students answered

in unison that the weathercaster would not be fulfilling his professional role if he made such a prediction on those grounds. These examples indicate our special effort in the second year of the program at the Regional Day School for the Deaf to adapt exercises from the Philosophy for Children Program as well as creating new ones for use with a social studies text, extending the program into the general curriculum of the school.

Evaluating the Program

In evaluating the program after the first year of implementation, we asked the students who participated in it to complete an "Analytic Thinking Questionnaire" created by Dr. Ron Reed, Director of the Analytic Thinking Program at Texas Wesleyan College. This questionnaire taps student response to Philosophy for Children Programs. On the basis of their responses, the majority of students at the Regional Day School for the Deaf indicated that as a result of the program, (1) they learned to express themselves more clearly, (2) they found their reading in traditional subject areas more meaningful, (3) they understood their teacher better than they did before participating in the program, and (4) they were better able to accept the feelings of others. However, the majority of students did not feel (5) that they understood themselves better as a result of the program or (6) that their classmates understood them better as a result. Nor did the majority of students claim (7) to discuss what happened in philosophy class with other children outside of class or (8) with adults (parents or friends). These results led us in the second year of the program to make some changes in our approach. For example, since the students did not appear to be thinking about their own thinking and, as a consequence, understanding themselves better, we decided to discontinue the use of the philosophical novel, Harry Stottlemeier's Discovery. In its place, we utilized the students' experiences inside and outside the class-

room as well as their own texts as the starting-points for our philosophical discussions. Designing exercises around their experiences and adapting others for use with their texts was an effort to personalize the program and to make it more relevant to the students.

Further evaluation of the program may occur with the use of the "Questioning Task #4," a test developed by Dr. Virginia Shipman of Educational Testing Service and Dr. Matthew Lipman of the Institute for the Advancement of Philosophy for Children. The Q-4 assumes a format which requires students to use the skills which they have developed as a consequence of their involvement in Philosophy for Children Programs. For example, a question from the Q-4 requiring the student to think analogically takes the following form:

"One-way streets are like rivers," thought Carol. "The traffic moves

a. fast."
b. in one direction like a stream."
c. through cities."

Or, a question requiring the student to engage in inductive reasoning takes the following form:

Bill has a bag full of jelly beans. He reaches in without looking and pulls out three jelly beans. They are all red. On the basis of what he knows, what can Bill figure out about the rest of the jelly beans in the bag?

a. They must all be red.
b. They may or may not be red.
c. They cannot all be red.

Many school systems have used the Q-4 as a pre- and post-test instrument for determining the degree of improvement of thinking skills on the part of students involved in Philosophy for Children Programs and have shown significant improvement in their results.

Finally, on the basis of the experiences at the Regional Day School for the Deaf, what differences, if any, are apparent in a Philosophy for Children Program

involving hearing versus hearing-impaired students? At the level of implementation, no significant differences are apparent. Hearing students, like hearing-impaired students, face similar difficulties in meeting the three expectations for engaging in philosophical discussions--that exploration of complex concepts would be the rule in such discussions rather than the exception, that exploration of complex concepts would follow a line of questioning that would not always lead to clear-cut answers, and that each student would be expected to participate with fellow classmates in following that line of questioning. At the level of practice, some important differences are apparent. Unlike most hearing students, the hearing-impaired students were constrained in tackling certain exercises because of deficiencies in language experience with various idioms and concepts. The hearing-impaired students were unfamiliar with many idioms and concepts with which most hearing students are familiar. Introducing hearing-impaired students to such idioms and concepts added a major step to the practice of the program with them. The time-consuming step of treating such idioms and concepts as vocabulary items before exploring their meaning and use on more and more abstract levels generated a special set of challenges in launching the Philosophy for Children Program with hearing-impaired students. However, once those challenges had been met, hearing-impaired students demonstrated the same language abilities as hearing students. Providing students with an opportunity to demonstrate their language abilities on higher levels than vocabulary usage marks an important reason for launching Philosophy for Children Programs with hearing-impaired students. To the extent that higher level language ability stems from higher level mental activities, the Philosophy for Children Programs promote cognitive development and, in the words of Harry Stottlemeier, 'thinking about thinking.'

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Reference Notes

1. These novels and the Instructional Manuals accompanying each one are published by The First Mountain Foundation in Montclair, N.J.

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